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I would suggest also that the internal secretions may possibly give the explanation of the modifying influence of the male element on the surrounding mother-tissue forming the fruit in plants. Darwin notes many cases of hybrids in which the fruit, though composed of purely maternal tissue, nevertheless plainly shows paternal characters. He explained these cases by the wandering of the pangens. It is not impossible that his 'pangens,' not only here, but in other cases, may be nothing else than the internal secretions. There can be little doubt, furthermore, that the internal secretions from the foetus play a very considerable part in the modification of the maternal organism during pregnancy.

The foregoing suggestions are difficult of proof, but they do not seem to me inherently improbable, since it is altogether unlikely that the metabolic coordination, which certainly exists in the adult organism, comes into being only after the close of embryonic development, and only in such organisms as possess a well developed vascular system. It is well, too, to bear these internal secretions in mind in the study of the development of organisms. Such an organ as the shell-gland of the molluscs may be of vastly greater value to the organism as a manufacturer of an internal secretion than as the maker of a protective shell.

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[NOTE: The above interesting suggestion regarding the physiological rôle of internal secretions in development is, as far as I know, new. It is obvious, however, that the interpretation given of rudimentary or temporary organs in development is nearly related to that of Kleinenberg, with which the author is apparently unacquainted. Kleinenberg long since held that the per-

manent parts of the embryo might appear and be guided in their development 'through the stimulus or by the aid' of 'rudimentary' as well as of obviously functional organs; and that 'when these (the permanent organs) have attained a certain degree of independence the intermediary organ, having played its part, may be placed on the retired list' (*Lopadorhynchus*, 1886, p. 223). Mr. Mathews' suggestion has the great merit of supplying an intelligible working hypothesis regarding the nature of the 'stimulus' or the 'aid' given by the intermediary organ, and it seems well worthy the attention of experimental embryologists.

E. B. W.]

A LAYMAN'S VIEWS ON SPECIFIC NOMENCLATURE.

ANYTHING that Dr. Hart Merriam writes is sure to be of great value. He is one of the leading mammalogists and he has laid all men interested in biology under a heavy debt by reviving the best traditions of the old-school faunal naturalist and showing that among the students of the science of life there is room for other men in addition to the section cutter, the microscopist and the histologist. There are a good many of us who look forward to the publication of his great work on the North American Mammals, including their life histories, as to something which will mark a real epoch in scientific work on this continent.

Having made this kind of preface, everyone will naturally and rightly conclude that I intend to say something in dissent from some of Dr. Merriam's views. I have just been reading his very interesting pamphlet on the smaller North American wolves, commonly called prairie wolves, or coyotes. His facts and deductions are most important; he has shown for the first time how many different races of coyotes there are, together with their inter-relationships and

their distribution in groups which coincide with the geographical divisions of their habitat. For the way in which he has worked out this, the most important, part of the article, no one can feel anything but admiration. But I quarrel with the terminology by which he seeks to describe the results at which he has arrived. He divides the coyote into a large number of different species, giving to each full specific rank and a specific name, in accordance with the theory of binomial nomenclature.

Now, terminology is a matter of mere convenience, and it is nothing like as important as the facts themselves. Nevertheless terminology has a certain importance of its own. It is especially important that it should not be clumsy or such as to confuse or mislead the student. Although species is a less arbitrary term than genus, still it remains true that it is more or less arbitrary. If one man chooses to consider as species what other men generally agree in treating merely as varieties it is unfortunate, both because the word is twisted away from its common use and further because it confuses matters to use it in a new sense to the exclusion of the word commonly used in that sense. Moreover, it is a pity where it can be avoided, to use the word so that it has entirely different weights in different cases.

I can illustrate what I mean by reference to the terminology used in describing the geographical distribution of mammals. It is not very important whether we call the great primary division of the world, faunistically considered, realms or regions. But it is important that we should not use the words first in one sense and then in another, and above all that we should not use the same word with totally different values. For example, Mr. Wallace's classification was absurd in so far as he made the Nearctic, Palearctic, Neotropical and Australian regions of equal value. There

are differences between the mammalian faunas of northern North America and northern Eurasia, but they are utterly trivial as compared with the differences which divide the fauna of both regions from the fauna of either South America or Australia, or indeed of South Africa. To indicate by the nomenclature used that the differences are of equal importance in the four cases is as misleading as it would be to describe the ethnology of the United States in terms that would imply that the New Englanders, the Kentuckians, the Indians and the Negroes formed four divisions of about even rank. There are differences between the New Englanders and the Kentuckians; but no one would dream of distinguishing the two by terms that would imply that they were as widely separated as either is from the Indians or Negroes.

It seems to me that the same principle should hold true of the excessive multiplication of specific terms to describe the different varieties of a group of animals like the coyote. Specific as well as generic terms are quite as useful in denoting likeness as in denoting unlikeness. The excessive multiplication of the species in the books cannot, as it seems to me, serve any useful purpose, and may eventually destroy all the good of the Latin binomial nomenclature. In the group of wolves, for instance, so far as North America is concerned, the really important points to remember and to bring out are that there are two types: one, the small wolf, the coyote, which, wherever found, is sharply separated from the other, and only exists in a portion of North America; and the other, the large wolf, which is much more widely distributed over North America than the coyote, and is practically identical with the wolf of Europe and north Asia. There are a great many varieties of each, just as there are doubtless a great many varieties of wolves in Europe and north Asia. Among coyotes

it is an interesting fact that the coyote of the Little Missouri is bleached compared to the coyote of the upper Mississippi, and that he has larger teeth than the coyote of the Rio Grande; but it seems to me to be unwise to separate all these forms by giving them rank that would imply that they differ from one another as much as they differ from the great gray wolves of the same region. I understand perfectly that this is not what Dr. Merriam means, and that he would subdivide the genus into various groups so as to show that the species are not of equal value. Nevertheless, the fact remains that the important point is the essential likeness of all the coyotes one to the other, and their essential difference from the big wolves with which they are associated, and which are themselves essentially like the big wolves of Europe and north Asia; and it seems to me that these facts can best be brought out by including the coyote and the wolf in one genus and treating each as a species. Then the geographical and other varieties may or may or may not be treated as worthy of sub-specific rank according to the exigencies of the particular case. The alternative is to use terms of super-specific value, including groups of minutely separated species; and this would be clumsy and would hardly seem worth while.

I will illustrate what I mean by referring to some other mammals. The points of resemblance between beasts like the wolverines, the beavers and the moose of the two northern continents are far more important than the points of difference. In each of these cases it does not matter much whether these animals are given separate, specific rank, because in each case the Old World and the New World representatives make up the whole genus; but even here it would seem to be a mistake to separate them specifically unless they are distinguished by characters of more than trivial

weight. The wapiti and Scotch red deer, for instance, are markedly different, and the differences are so great that they should be expressed by the use of specific terms. If the American moose and Scandinavian elk are distinguished by specific terms of the same value, then it ought to mean that there is something like the same difference between them that there is between the red deer and the wapiti, and as far as our present knowledge goes this is not so. The wolverines, beavers and moose of the two continents should only be separated by specific terms, if the differences between each couple are of some weight, if they approximate the differences which divide the red deer and the wapiti, for instance—and I know that even these two may intergrade.

I would not dogmatically assert that even though forms intergrade they should not be sometimes separated by specific titles. In their extreme forms the grizzly bear and the little black bear are certainly utterly different, and I have shot these extreme forms within a mile of one another on the Big Horn Mountains. Whether they intergrade or not, there should be a sharp line of difference drawn between the typical representatives of these two kinds of bears; but I confess that I think that many of the multitude of 'species' of holartic bears will have to be reduced to less than specific rank before we get a very clear idea of the true relationship of the bears of North America and northern Eurasia. The excessive multiplication of species based on trivial points of difference merely serves to obscure the groupings which are based on differences of real weight. Moreover, it has always seemed to me unwise to make the word species depend solely upon the accident of the survival or non-survival of some connecting link. Two closely connected forms may not intergrade, while two widely separated forms may; and it seems to me the term species should express the

fact of a wide and essential variation rather than the accident of the existence of a connecting link.

One more example and I am done. The cougar, or puma, is a perfectly distinct and well marked kind of cat, noteworthy not only for the sharpness with which its color and other points differentiate it from its spotted relatives, but also for the extent of its range. It seems to me it would be unwise because of any trivial differences to establish various species of cougars, separating the different races by terms of the same weight by which we separate, for instance, any one of them from the totally different jaguar. Here again the essential point is the likeness the cougars bear to one another, and their wide unlikeness to the great spotted cats. The Latin name we give them should indicate, by the employment of the generic term, their resemblance to all other cats, and by the employment of the specific term their fundamental agreement among themselves on points wherein they differ from all other cats. Of course, it would be possible to make the pumas into one genus, with another for the leopards, another for the lions, etc., etc.; but this again seems to me to be clumsy and, on the whole, misleading.

I quite realize that there is a certain amount of presumption in a layman criticizing any conclusion reached by a trained scientific expert of the standing of Dr. Merriam. It must be remembered that my criticism is directed only to the expediency of the terminology by which he expresses certain of his results, and not in the least to the results themselves; in fact, it is because I am so ardent an admirer of Dr. Merriam's work that I wish to see it made, without any sacrifice of accuracy, so comprehensible in its terms as to be easily understood by the lay mind.

THEODORE ROOSEVELT.

CURRENT NOTES ON ANTHROPOLOGY.

CONTRIBUTIONS TO ETHNO-BOTANY.

IN the last number of the *Internat. Archiv für Ethnographie*, the editor, Dr. Schmeltz, reviews the progress of ethno-botany, referring with special emphasis to Professor Guppy's 'plant names of Polynesia' (published by the Victoria Institute, 1895). Such studies cast a light upon the early migration of tribes which cannot be obtained from other sources.

An interesting example is given in the *American Anthropologist*, February, by Mr. Walter Hough. It is upon 'The Hopi in relation to their Plant Environment.' How important their floral world, sparse as it is, has been to this people may be judged from the author's remark: "There is almost no plant which the Hopi do not use in some way, and there is none to which they have not given a name." An ample list is added, including the native name, the botanical title and the use to which the plant is put.

CANNIBALISM IN EUROPE.

WE rarely reflect how near in time modern civilization is to savagery. Less than a thousand years ago the Picts of Great Britain were man-eating barbarians. The recent researches of Matiegka, in Bohemia, prove that anthropophagy prevailed there in the bronze age (*Centralblatt für Anthropologie*, January, 1897). If we can trust mediæval authorities quoted by Dr. Krauss in the *Der Urquell*, B. I., they held distinctly in memory the period when the Wends and Slavs 'killed, cooked and ate' their aged relatives.

But this is quite surpassed by the evidence adduced by the same writer that the southern Slavonians even down to well within the present century were familiar with the custom of ceremonially eating the flesh of their enemies. Indeed, one of their songs, as late as 1820, refers to it as a recognized procedure. To taste the broth